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METACOGNITION - A STRATEGY FOR DEVELOPING SELF-REGULATORY MECHANISMS

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ABSTRACT

This article explains Metacognition in a practical way as it is being used as a strategy for developing self- regulatory mechanisms. You will comprehend the fundamentals of this potent psychological instrument and way of thinking after reading. This writes up provides a general definition of the idea along with illustrations, suggestions, elements of metacognitive regulation and advices, the relationship between metacognition and the need for cognition, effortful cognitive activity, and metacognition which is one's thinking about thinking and how these variables relate to intellectual task performance.

KEYWORDS: Cognition, Metacognition, Strategy, Self- Regulation

INTRODUCTION

Thinking about thinking or metacognition enables one to keep an eye on and manage cognitive processing. When people correctly assess their performance in a cognitive activity, such as a perceptual discrimination or a memory test, (either prospectively or retrospectively), metacognition is inferred. It has been noted that non-human animals such as dolphins, rats, monkeys, and apes exhibit metacognition. There are ongoing efforts to recognise and distinguish between the various cognitive systems that may support metacognition. Associative learning on stimuli that can be seen by the general public is used by some systems for metacognitive performance.

Metacognition- Its meaning

Metacognition is *'thinking about thinking', 'knowing about knowing'* and *'becoming aware of awareness'*. The term comes from the root word meta, which means further or on top of. It takes many forms and includes knowledge about when and how certain strategies can be used to solve problems or to learn. In general, metacognition involves two components: knowledge about cognition and regulation of cognition.

Metacognition refers to one's knowledge concerning one's own cognitive processes or anything related to them **(Flavell, 1976)**. Quite simply, metacognition is thinking about thinking. **Brown (1987)** divides metacognition into two broad categories: Knowledge of cognition and regulation of cognition. Knowledge of cognition refers to activities that involve conscious reflection on one cognitive abilities and activities. Regulation of cognition refers to activities regarding self-regulatory mechanisms during an ongoing attempt to learn. Any process in which students examine the method that they are using to retrieve, develop or expand information is deemed to be metacognitive in nature **(Everson et.al. 1998)**. Metacognitively aware learners "know what to do when they don't know what to do" **(Countinbo (2007)**. In other words, they have strategies for discovering or working out what needs to be done. Metacognitive strategies are designed to monitor cognitive process. Metacognitive strategies are ordered processes used to control one's own cognitive activities and to ensure that a cognitive goal has been met. A student with good metacognitive awareness oversees his own learning process, plan and monitor ongoing cognitive activities. The use of metacognitive strategies ignites one's thinking and can lead to better learning and higher performance, especially among learners who strive. Developing metacognitive instructions or questions about the topic at hand would be more challenging for the teacher. The teacher would have to change his/her mind-set and pose questions that truly require the teacher to analyse the existing links to other common experiences and material, determine which processes the student may possibly use, and formulate questions accordingly. Some of the questions that are posed during the discussion can be meaningful and multifaceted. **Hartman (2001)** states that teaching with metacognitive strategies means that teacher will think about how their instruction will activate and develop students' metacognition.

John Flavell (1976) was the first to coin the term "metacognition. " He is acknowledged as the creator of this field. According to Flavell, metacognition is the awareness that a person has of their own cognitive functions. John Flavell shares an example: *"I engage in metacognition when I have more difficulty learning A than B and when I have to check C again before accepting it as fact."* Therefore, it is the capacity to exert mental control through a variety of means. These tactics include organising, monitoring, and adapting, as examples. The capacity to consider the tasks, procedures, and circumstances necessary for intercultural encounters is known as metacognition.

Applying this is seen to be a crucial component of learning effectively. It is closely related to self-control, self-reflection of one's strengths and flaws, and the tactics one develops to accomplish a task. The foundation of culturally competent leadership is metacognition, which highlights how someone views a situation or problem and the approaches they will use to solve it.

The Need for Cognition

The phrase "need for cognition" first used in research on cognitive motivation by Cohen, Stotland, and Wolfe (1955).

They defined the requirement for cognition as "a desire to organise pertinent situations in meaningful, integrated ways. It is necessary to comprehend and rationalise the experimental environment. The definition of the demand for cognition as "the tendency to engage in and enjoy effortful cognitive activity" was refined by **Cacioppo and Petty (1982)**. People those require cognition frequently are intrinsically motivated to think.

Metacognitive Research

Research on metacognition has its roots in two distinct areas of research: developmental psychology and cognitive psychology. Metacognitive research in the area of developmental psychology can be traced back to the theory proposed by Jean Piaget and Lev Vygotsky. However, metacognitive research in a pure form did not emerge until the 1970s, when Flavell and his colleagues investigated children's knowledge of their own cognitions. They were interested in finding out if the improvement in children's memory abilities was a function of greater conscious understanding of the rules that govern memory and cognition. Thus, the studies trace the development of metacognitive thinking, that is, the ability to reflect on one's own cognitive processes.

In the area of cognitive psychology, work on metacognition was initiated by the investigation on Feeling of Knowing Experiences **(FOKs)**. First, people were given a recall test, of either newly learned information or general knowledge. For example, participants might have been asked, “What is the capital city of the Bahamas?” (Nassau). If the participant was unsuccessful at recall, the participant was asked to make a feeling-of-knowing judgment, predicting the answer would be recognized in a multiple-choice format. Finally, the participant received the recognition test. It was shown that feeling-of-knowing judgments did indeed predict the likelihood of correct recognition for general knowledge materials, an observation replicated many times. However, in mainstream cognitive psychology, metacognition still lingered at the fringes. Indeed, at most conferences, metacognition researchers presented their papers in memory sessions not metacognition sessions. In the twenty-first century metacognition has emerged as an important subfield of cognitive psychology. Perhaps in part, the emergence of metacognition into the mainstream reflects the greater focus of cognitive psychologists on the experiential aspects of memory.

Research in metacognition has covered mainly three components:
(a) knowledge about strategies (knowledge about when, where, and why different strategies should be used); (b) strategy use (the actual use of metacognitive strategies); and (c) cognitive monitoring (an acquisition procedure needed for evaluating and changing strategy use and for determining the limits of the knowledge).

Among the conclusions reached by metacognitive research to date are that:

(a) knowing about knowing develops
(b) both children and adults often fail to monitor cognitions and
(c) some strategies are difficult to learn and easy to abandon.

The relationship between metacognition and thinking skills, which supported the use of the former to enhance the latter, has led to a focus on groups with learning challenges among researchers. Numerous studies linking metacognitive dysfunction to schizophrenia have been conducted due to the belief that self-monitoring and self-regulation are key components of competent functioning in the real world.

Others, on the contrary, focused on the importance of metacognition for general aptitude and giftedness. Several researchers have reported significant differences in metacognitive strategy usage between intellectually gifted and average students.

Elements of Metacognitive Knowledge

As described, Flavell distinguishes between metacognitive knowledge and metacognitive regulation.

Metacognitive knowledge refers to what individuals know about their own metacognitive processing, about different approaches that can be used for problem solving, and about the requirements and conditions for successfully completing a task.

Metacognitive regulation mainly refers to the adjustments that individuals make in their cognitive processes to help manage and improve their learning. Examples include plans, information management, evaluation of progress and SMART Goals, etc. Metacognitive knowledge is further divided into three categories.

Person Variables

A person variable is what someone knows about his or her strengths and weaknesses in learning and processing information.

Strategy Variable

Strategy variables are the strategies that a person is always ready to apply in various ways to accomplish a task. Examples include activating prior knowledge before studying a technical article, using a glossary to look up unfamiliar words, or realising that a paragraph has to be read multiple times to be understood.

Task Variable

Task variables are everything someone knows about the nature of a particular task and the requirements to perform the task. An example of this is the knowledge that reading an academic article takes more effort to understand and remember than any passage from a novel. **Livingston (2003)** gave his own definition of metacognitive knowledge by describing these variables: 'I know that I (person variable) have trouble with word problems (task variable), so I will answer the math problems first and save the language problems for last.

Elements of Metacognitive Regulation

Like metacognitive knowledge, metacognitive regulation also includes some conditions or metacognitive skills that are essential.

Planning

Planning refers to the selection of strategies and allocation of resources that influence the task performance. Selecting good strategies and proper allocation of resources is a sign of accurate planning in the metacognitive regulation process.

Monitoring

Monitoring refers to an individual's awareness of understanding and task performance. They monitor their learning as a process step of their metacognitive strategy.

Evaluate

Evaluation refers to assessing the end product of a particular task. The efficiency with which the task has been performed is

also assessed.

Metacognitive Strategies

Below are some effective strategies for advancing metacognitions.

Self-Questioning

The evaluation technique known as self-questioning allows learners to assess their grasp of what they have learned by posing pertinent questions to themselves before, during, and after learning. To help pupils gain a deeper knowledge of the subject, you can encourage them to do this. Many people have tried and tested this metacognitive technique. One of the experiments looked into whether the amount of learning that students could absorb in a given time frame was impacted by self-questioning. Several groups were created. The first group asked themselves these questions during the lecture. Students in the next group asked themselves questions during the lecture and had a Q&A session with each other afterwards. The third group of students discussed the content of the lecture in a small group, and the students from the last group of students assessed the material individually.

Thinking out loud

- Thinking out loud helps control people's thinking ability while reading.
- Improves understanding of what is being considered.
- Thinking aloud slows down the reading process and as a result people are forced to follow the text with focus.

Visualizations

Another strategy for improving metacognitions is to use graphic organisers. These are also called cognitive tools. Visualisations actively help to improve the human thinking process. Visualisations help individuals:

- Ordering thoughts
- Making connections between things they know
- The visualisation of processes and procedures

There are many forms of visualisation to support the human thought process. Examples are:

- Mind mapping
- Flow charts

Metacognition and Learning styles

According to learning style theories like the Gardner Multiple Intelligence Theory, different people learn in various ways. Knowing which approach is most effective for a particular person is therefore vital. These are typical learning styles:

Visual

A visual learner learns optimally through graphs, images, documentaries and other visualisations. This group of people is very good at identifying patterns and matching colours.

Auditory

An auditory pupil learns optimally by listening instead of watching or reading. They enjoy hearing stories and listening to podcasts.

Kinaesthetic

A kinaesthetic student learns optimally through movement. This group of people like to learn by doing things instead of reading or listening. They are active rather than passive people.

Logical-mathematical

People who learn logical mathematics are good at using reasoning to find answers to difficult questions. They are generally good with numbers, but sometimes have difficulty with subjective issues.

Interpersonal

Social connection is the best way to learn for an interpersonal learner. They are skilled at working in teams, have strong emotional intelligence, and can compromise well to complete tasks.

Intrapersonal

A person who prefers to learn things by reflecting on them is said to be an intra-personal learner. To study and experience cooperation as a diversion, they prefer to remain alone and alone. When a person is aware of how their brain best absorbs information, they can focus on their individual strengths and shortcomings. The researchers discovered that the first two groups' pupils did better than the final two groups' students.

CONCLUSION

A key predictor of academic performance and problem-solving aptitude is metacognition **(Theide et al., 2003)**. Students are more likely to revisit and understand new material if they can distinguish between information they have learnt and information they have not **(Everson & Tobias, 1998)**. Students will likely stop studying if they think they are prepared for the test in full. Teachers' motivation to adapt and innovate stems from the need to "motivate" students who appear to have lost interest in science. The use of metacognitive techniques can encourage students and provide them with the chance to acquire, comprehend, and apply the knowledge they are exposed to in the classroom and in daily life **(Kramarski. et.al. 2004)**. The students will become increasingly independent while dealing with novel situations as a result. Students should be allowed to explore and investigate on their own in order to gain understanding with the help of teachers acting as guides.

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